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10/729,428

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EXAMINER

CAVALLARI, DANIEL J

ART UNIT

PAPER NUMBER

2836

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/729,428	<b>Applicant(s)</b> ECKROAD ET AL.	
	<b>Examiner</b> DANIEL CAVALLARI	<b>Art Unit</b> 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-17,19-22,24-27 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-17,19-22,24-27 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

Applicant's After Final arguments filed 2/23/2009 have been fully considered.

The Declaration filed on 2/23/2009 under 37 CFR 1.131 has been considered and is effective to overcome the Rajagopalan (US 2003/0160514) and Welches et al. (US2004/0084965) references. Therefore, Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. However, this action is made final as necessitated by the amendments of 8/6/2008.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4-10, 22, 24, 25, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamura T (JP 2001-286078) [note paragraph references under the Tamura rejection are in reference to the provided English translation of the Japanese document].

In regard to Claims 1 and 22

An electrical power source comprising:

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- A static converter (20, Figure 1) continuously converting power to a fixed frequency AC output power (See paragraphs 23-28, noting the inverter (20) provides series compensation in a “compensation mode” and provides power from battery (30) in a UPS mode. Further noting that the input is fixed, see paragraph 18).
- An electrical power storage subsystem (10, 30) [UPS] (See Figure 1).
- An electrical power generator (60, Fig 1).
- A multimode control system (100, 200, Fig 1) coupled with the static converter, the electrical power storage subsystem and the electrical power generator, such that continuous backup power is provided to the load by both the electric power storage subsystem and the electrical power generator simultaneously and cooperatively (see paragraphs 20-30).

In regard to Claim 2

- Wherein the control system provides a plurality of modes of operation including at least a static compensator and an uninterruptible power supply operational mode (See Paragraphs 19-30).

In regard to Claim 4

- Wherein the control system provides a multiplicity of generator connection modes, including a dc-connected generator mode (read on by a battery) and an ac-connected generator mode (See Figure 1).

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In regard to claim 5

- Wherein the control system comprises a feedback loop (See paragraphs 55-62).

In regard to Claims 6, 24, and 25

- Wherein the control system comprises a current control system coupled with the electrical power storage subsystem and the electrical power generator and a voltage control system coupled with at least the electrical power storage subsystem (See paragraphs 55-62) [noting the controller controls the generator by connecting and disconnecting the generator via the switch, as controlled by the controller].

In regard to Claim 7

- Wherein the current control system includes a current controller (150, Fig 10) coupled with a pulse pattern generation unit (160, Fig 10) and the pulse pattern generation unit couples with the electric power storage subsystem and is configured to supply control signals to the electrical power storage subsystem (10) (see Fig 9 and paragraph 15).

In regard to Claim 8

- Wherein the voltage control system includes a voltage source converter controller (180, Fig 10 and paragraph 55) coupled with the pulse pattern generation unit and the pulse pattern generation unit couples with the electrical power storage subsystem and is configured to supply control signals to the electrical power storage subsystems.

In regard to Claims 9 and 27

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- Wherein the energy storage system [noting the lack of antecedent basis for “energy storage system” wherein claim should read “the electric power storage subsystem”] includes a VSC (560) coupled with an energy storage unit (30), wherein the energy storage unit is configured to store electrical energy and the VSC is configured to draw energy from the energy storage unit (see Fig 7) and supply electrical energy to the energy storage unit (see paragraph 103-104 noting how the converter 10 forms a loop which draws and supplies power to the storage unit).

In regard to Claims 10 and 26

- Wherein the control system further comprises a detection and mode selection unit (85, see paragraph 102) couple with the current control and voltage control and configured to determine the mode of operation of the apparatus (See Paragraph 102).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 12, 14, 15, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura in view of Hingorani, N.G. “Introducing Custom Power”.

In regard to claim 11

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Tamura teaches the use of a switch (80, Fig 9) which is opened and closed to an AC line in response to the detection and mode selection unit (85) (See Paragraph 102) but fails to explicitly teach (1) a “grid”; and (2) the use of a solid state breaker.

Hingorani teaches a STATCOM energy supply system comprising a power grid and the use of solid state breakers (page 44, “Power electronics in control”) used in a power generation system to connect a power feed to a load (see Fig, page 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the grid AC power supply and solid state breaker taught by Hingorani into the system of Tamura who is silent in regard to the specific type of AC source and switch used. The motivation would have been to provide a simple, well known and well available AC source and switch capable of handling high voltages and high currents.

In regard to claims 12, 14, 15, and 29

Tamura teaches the use of a storage subsystem [noting there is a lack of antecedent basis for “storage subsystem” and the claim should read “the electrical storage subsystem”] comprises a (1) battery; or (2) superconducting magnets; or (3) capacitor.

Hingorani teaches an electrical storage subsystem comprising a (1) battery; or (2) superconducting magnets; or (3) capacitor (see figure, page 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a specific DC storage medium as taught by Hingorani using a (1) battery; or (2) superconducting magnets; or (3) capacitor. The motivation would have been to provide a superior source of power known in the art.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura n in view of Heinemann et al. (hereinafter referred to as Heinemann), “Economical Power Quality Enhancement in MV Distribution Networks by Power Electronics Solutions (IEE 2001 Conference).

Incorporating all arguments above in regard to the electrical power system taught by Tamura, Tamura fails to explicitly teach the use of a flywheel as a source of power. Heinemann teaches an electrical power system comprising static compensation also comprising a flywheel energy store (see Section 4 “Next Generation of PQ-Systems” and Figure 3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the flywheel in place of the DC storage taught by Tamura who fails to explicitly teach the DC source used. The motivation would have been to take advantage of the flywheels earth friendly characteristics as opposed to batteries and other chemically based DC storage systems.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura n in view of Jungreis et al. (US 6,134,124).

Incorporating all arguments above, Tamura teaches the use of a DC source (See Figure 9) but fails to explicitly teach the use of compressed air energy storage.

Jungreis et al. teach a UPS system incorporating compressed air energy storage (See Column 2, Lines 42-48).



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It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the compressed air energy storage taught by Jungreis et al. with the system of Tamura. The motivation would have been to take advantage of the low energy consumption of compressed air energy storage systems.

Claims 17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura in view of Bender et al. (US 2003/0016702) (hereinafter referred to as Bender).

Incorporating all arguments above, Tamura teaches an electrical power system comprising control components (see Figs 9 and 10) however fails to explicitly teach the physical composition of these components. Particularly, whether they comprise hardware/software, a combination of both or if the control circuitry is in module form.

In regard to Claim 17

Bender teaches: Wherein the control system includes at least one storage control module [noting Tamura teaches the control circuitry (Fig 9) but fails to teach it in “module” form] specifically configured for controlling the operation of the electrical power storage subsystem (noting Bender teaches control circuitry in module form, see paragraph 137-139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the module configuration taught by Bender into the system of Tamura. The motivation would have been to provide a module configuration (ie combination software,

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hardware, using a general purpose processor and removable disk) allowing easy upgrades, maintenance, and the ability to interchange the control module with a second electrical generator.

In regard to Claim 19

Bender teaches: Wherein the storage control module is chosen from the group comprising a software configuration, a hardware configuration, and a combination of a software and a hardware configuration (See Paragraph 137-139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the module configuration taught by Bender into the system of Tamura. The motivation would have been to provide a module configuration (ie combination software, hardware, using a general purpose processor and removable disk) allowing easy upgrades, maintenance, and the ability to interchange the control module with a second electrical generator.

In regard to Claim 20

Bender teaches: Wherein the control system includes at least one electrical power generation control module specifically configured for controlling the operation of the electrical power generator (See Paragraph 137-139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the module configuration taught by Bender into the system of Tamura. The motivation would have been to provide a module configuration (ie combination software, hardware, using a general purpose processor and removable disk) allowing easy upgrades, maintenance, and the ability to interchange the control module with a second electrical generator.

In regard to Claim 21

Bender teaches: Wherein the electrical power generator control module is interchangeable with a second electrical power generator control module that is specifically configured for controlling the operation of a second electrical power generator [The Examiner notes that the software unit is taught to be programmable in one embodiment and is interchangeable with a duplicate of the power supply system, see paragraphs 137-139].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the module configuration taught by Bender into the system of Tamura. The motivation would have been to provide a module configuration (ie combination software, hardware, using a general purpose processor and removable disk) allowing easy upgrades, maintenance, and the ability to interchange the control module with a second electrical generator.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Cavallari whose telephone number is 571-272-8541. The examiner can normally be reached on Monday-Friday 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DJC/

March 9, 2009

/Albert W Paladini/  
Primary Examiner, Art Unit 2836

3/10/09